

1. A switching device comprising:
a first conductive terminal;
a second conductive terminal; and
a conductive pill that moves between an open position
5 and a closed position wherein said first and said second
terminals are shorted in said closed position, wherein said
first and said second terminals are not shorted in said
open position, and wherein said conductive pill comprises a
conductive loaded, resin-based material comprising
10 conductive materials in a base resin host.

2.The device according to Claim 1 wherein the ratio, by
weight, of said conductive materials to said resin host is
between about 0.20 and about 0.40.

3.The device according to Claim 1 wherein said conductive
materials comprise metal powder.

4.The device according to Claim 4 wherein said metal powder
is nickel, copper, silver, or is a material plated with
nickel, copper, or silver.

5.The device according to Claim 3 wherein said metal powder
comprises a diameter of between about 3 μm and about 12 μm .

6.The device according to Claim 1 wherein said conductive materials comprise non-metal powder.

7.The device according to Claim 6 wherein said non-metal powder is carbon, graphite, or an amine-based material.

8.The device according to Claim 1 wherein said conductive materials comprise a combination of metal powder and non-metal powder.

9.The device according to Claim 1 wherein said conductive materials comprise micron conductive fiber.

10.The device according to Claim 9 wherein said micron conductive fiber is nickel plated carbon fiber, stainless steel fiber, copper fiber, silver fiber or combinations thereof.

11.The device according to Claim 9 wherein said micron conductive fiber pieces each have a diameter of between about 3 μm and about 12 μm and a length of between about 2 mm and about 14 mm.

12.The device according to Claim 1 wherein said conductive materials comprise a combination of conductive powder and conductive fiber.

13.The device according to Claim 1 wherein at least one of said first and second conductive terminals comprise a conductive loaded, resin-based material comprising conductive materials in a base resin host.

14.The device according to Claim 1 wherein said movable conductive pill is fixably mounted on a keypad.

15.The device according to Claim 14 wherein said keypad is part of an array of keypads on a keyboard device.

16.The device according to Claim 14 wherein said array of keypads comprises a common membrane.

17.The device according to Claim 16 wherein said membrane comprises a conductive loaded, resin-based material comprising conductive materials in a base resin host.

18.The device according to Claim 14 further comprising a pad structure and a spring structure wherein said

conductive pill, said pad structure, and said spring
structure all comprise a conductive loaded, resin-based
5 material comprising conductive materials in a base resin
host.

19. The device according to Claim 1 wherein said conductive
pill rotates about an axis to move between said open and
closed positions.

20. The device according to Claim 1 wherein said conductive
pill tilts in three dimensions to move between said open
and closed positions.

21. A keypad device comprising:
a first conductive terminal;
a second conductive terminal;
a pad structure;
5 a spring structure; and
a conductive pill that moves between an open position
and a closed position wherein said first and said second
terminals are shorted in said closed position, wherein said
first and said second terminals are not shorted in said
10 open position, and wherein said conductive pill, said pad
structure, and said spring structure all comprise a

conductive loaded, resin-based material comprising
conductive materials in a base resin host.

22.The device according to Claim 21 wherein the ratio, by
weight, of said conductive materials to said resin host is
between about 0.20 and about 0.40.

23.The device according to Claim 21 wherein said conductive
materials comprise metal powder.

24.The device according to Claim 21 wherein said conductive
materials comprise non-metal powder.

25.The device according to Claim 24 wherein said non-metal
powder is carbon, graphite, or an amine-based material.

26.The device according to Claim 21 wherein said conductive
materials comprise a combination of metal powder and non-
metal powder.

27.The device according to Claim 21 wherein said conductive
materials comprise micron conductive fiber.

28.The device according to Claim 21 wherein said conductive materials comprise a combination of conductive powder and conductive fiber.

29.The device according to Claim 21 wherein at least one of said first and second conductive terminals comprise a conductive loaded, resin-based material comprising conductive materials in a base resin host.

30. A switching device comprising:

a conductive terminal; and

a conductive pill that moves between an open position and a closed position wherein capacitance coupling between
5 said conductive terminal and said conductive pill is greater in said closed position than in said open position, and wherein said conductive pill comprises a conductive loaded, resin-based material comprising conductive materials in a base resin host.

31.The device according to Claim 30 wherein the ratio, by weight, of said conductive materials to said resin host is between about 0.20 and about 0.40.

32.The device according to Claim 30 wherein said conductive

materials comprise metal powder.

33.The device according to Claim 30 wherein said conductive materials comprise non-metal powder.

34.The device according to Claim 33 wherein said non-metal powder is carbon, graphite, or an amine-based material.

35.The device according to Claim 30 wherein said conductive materials comprise a combination of metal powder and non-metal powder.

36.The device according to Claim 30 wherein said conductive materials comprise micron conductive fiber.

37.The device according to Claim 30 wherein said conductive materials comprise a combination of conductive powder and conductive fiber.

38.The device according to Claim 30 wherein said keypad is part of an array of keypads on a keyboard device.

39.The device according to Claim 38 wherein said array of keypads comprises a common membrane.

40.The device according to Claim 39 wherein said membrane comprises a conductive loaded, resin-based material comprising conductive materials in a base resin host.

41.The device according to Claim 38 further comprising a pad structure and a spring structure wherein said conductive pill, said pad structure, and said spring structure all comprise a conductive loaded, resin-based
5 material comprising conductive materials in a base resin host.

42.The device according to Claim 30 wherein said conductive pill rotates about an axis to move between said open and closed positions.

43.The device according to Claim 30 wherein said conductive pill tilts in three dimensions to move between said open and closed positions.

44.A method to form a switching device, said method comprising:

providing a conductive loaded, resin-based material comprising conductive material in a resin-based host; and

5 molding said conductive loaded, resin-based material
into a conductive pill in a switching device wherein said
switching device comprises:

 a conductive terminal; and

 a conductive pill that moves between an open
10 position and a closed position.

45.The method according to Claim 44 wherein the ratio, by
weight, of said conductive materials to said resin host is
between about 0.20 and about 0.40.

46.The method according to Claim 44 wherein the conductive
materials comprise a conductive powder.

47.The method according to Claim 44 wherein said conductive
materials comprise a micron conductive fiber.

48.The method according to Claim 44 wherein said conductive
materials comprise a combination of conductive powder and
conductive fiber.

49.The method according to Claim 44 wherein said molding
comprises:

injecting said conductive loaded, resin-based material
into a mold;

- 5 curing said conductive loaded, resin-based material;
and
removing said conductive pill from said mold.

50.The method according to Claim 44 wherein said molding
comprises:

- injecting said conductive loaded, resin-based material
into a chamber;
5 extruding said conductive loaded, resin-based material
out of said chamber through a shaping outlet; and
curing said conductive loaded, resin-based material to
form said conductive pill.

- 51.The method according to Claim 50 wherein said step of
extruding forms a rod of said conductive loaded, resin-
based material and further comprising cutting said extruded
conductive loaded resin-based material to form said
5 conductive pill.

52.The method according to Claim 44 further comprising
forming a metal layer around said conductive loaded, resin-
based material.

53. The method according to Claim 52 wherein said step of forming a metal layer around said conductive loaded, resin-based material is by plating or by coating said metal layer.